

REMARKS

Claims 1-16 are pending in this application, with claims 1, 4, 7, 10 and 13-16 being independent. Claim 1, 4, 7, 10 and 13-16 have been amended. Favorable reconsideration is respectfully requested.

The Office Action rejected claims 1-16 under 35 U.S.C. § 103 as obvious from U.S. Patent No. 6, 418, 199 to Perrone in view of U.S. Patent No. 6, 421,632 to Le Corney. This rejection is respectfully traversed.

Touch-tone IVR systems, which were introduced over a decade ago, are perhaps the most widespread class of human-computer interfaces. Since their inception, such systems have been adopted enthusiastically, particularly to perform customer-support types of functions, and have permitted their adopters to reduce significantly the amount of manpower required to maintain a call center. When configured properly, IVR systems can allow more customers to be provided with more support and services more quickly than ever before, and can streamline greatly the call center interaction process.

Nonetheless, many calling customers have classically exhibited an antipathy towards IVR systems, viewing them as frustrating and difficult to use. Such problems generally stem not from the fact that interacting with an IVR system is an inherently complex task, but rather from the fact that the systems are often poorly configured, particularly from the point of view of their usability. As a result, it has become extremely desirable to have tools which allow the manner in which an IVR system is used to be tracked and effectively evaluated, so that the systems usage may be assessed with an eye towards improvement.

Towards that end, the present invention relates generally to methods and systems for visually representing user behavior of an automated system, such as for example

user behavior of an interactive voice response (IVR) system. In the method of independent claim 1, a complete sequence of events within an IVR system for multiple calls is generated and stored, with the calls being recorded from end to end. Call flow of the IVR system is modeled as a non-deterministic finite-state machine, and the complete sequence of events is provided to the finite-state machine to produce a two-way matrix of several counters. Then, data from the two-way matrix is visually represented as a state-transition diagram.

Perrone does not relate to a method of representing user behavior or assessing IVR performance. Instead, it is directed only to a method of controlling a remote server through voice commands, input into a telephone coupled to the server via the public switched telephone network (PSTN) and an IVR system. Because Perrone is not directed to a method of visually representing user behavior within an IVR, it does not disclose many of the features of claim 1.

For example, Perrone fails to teach or suggest “generating and storing a complete sequence of events within the IVR system for plural calls to the call processing center, the plural calls being recorded from end to end.” Column 7, lines 22-35 of Perrone, identified in the Office Action as corresponding to this feature, merely discloses the running of an IVR application program, which directs incoming calls, answers incoming calls, presents prerecorded greeting and messages to the caller, receives and interprets caller inputs and responds to caller inputs. The IVR application program controls the functionality of the IVR system; it does not represent user behavior:

The IVR application program 42 defines features and functions available to the end user 2 for controlling the IVR system.

(Perrone at 7:28-30) (emphasis added). Because Perrone is not directed to a method of visually representing user behavior within an IVR system, there is nothing in Perrone to teach or suggest the generating and storing of a complete sequence of events, or the recording of calls from end to end.

Similarly, Perrone does not teach or suggest, “modeling a call flow of the IVR system as a non-deterministic finite-state machine.” Column 9, lines 10-28, identified in the Office Action as corresponding to this feature, merely further discloses certain aspects of the operation of the IVR system. Because Perrone is not concerned with visually representing user behavior, it is not concerned with, and does not teach or suggest anything about, modeling a call flow.

Perrone also fails to teach or suggest, “providing the complete sequence of events for plural calls to the finite-state machine.” Column 9, lines 42-54, identified by the Office Action as corresponding to this feature, discloses the operation of a Web application 34, being run on the server, to retrieve a Web page that contains a menu for services being provided to the user. This Web page has graphical and textual elements, and provides the user with a list at trading functions, account review functions and industry information sources. There is nothing whatsoever to teach or suggest anything about providing a complete sequence of events for plural calls, let alone anything about providing such a sequence to a finite-state machine.

Finally, because Perrone is not directed to a method of visually representing user behavior within an IVR system, it does not teach or suggest the last recited step of

“visually representing data from the two-way matrix as a stare-transition diagram.” The Office Action does not even contend that Perrone discloses this step, and of course it is plainly missing.

Le Corney relates to the monitoring of errors in processes, such as parity errors, sporadic hardware faults, bit-correction errors, cyclic-redundancy-check errors, congested call attempt, synchronization slip, protocol errors, signally errors, etc. It is not at all directed to a method of visually representing user behavior within an IVR system, and certainly does not correct any of the deficiencies of Perrone noted and discussed above.

Accordingly, Applicants respectfully submit that claim 1 is not obvious from Perrone or Le Corney, or their combination, and respectfully request the Examiner to remove the corresponding Section 103 rejection.

Independent claims 4, 7, 10, 13, 14, 15 and 16 are directed to apparatuses, systems, computer program products or methods that incorporate the salient features of claim 1 discussed above, and are therefore patentable for the same reasons.

The remaining claims all depend from one of the independent claims discussed above, and each partakes in the novelty and non-obviousness of its respective base claim. In addition, each recites additional patentable features of the present invention, and individual reconsideration of each is respectfully requested.

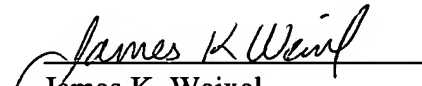
CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and an early passage to issue of the present application.

If there are any fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 07-2339. If an extension of time under 37 C.F.R. § 1.136 not accounted for above, is required, such an extension is requested and the fee should also be charged to our Deposit Account.

Applicants' undersigned attorney may be reached at (781) 466-2220. All correspondence should be directed to our address given below.

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